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By

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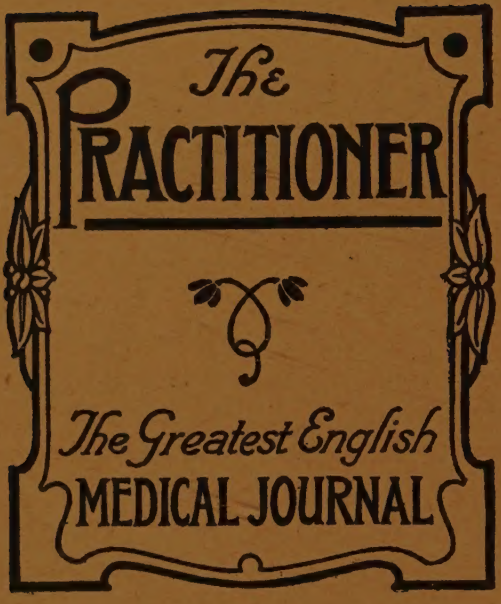
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MYCOTIC PRURITUS ANI.

SOME years ago I described as a separate entity "Pruritus Ani of Mycotic Origin." My publications have so far attracted little attention, and even in very recent articles on pruritus ani by various authorities the mycotic or fungal variety is not mentioned, although the so-called bacterial type (*Streptococcus pruritus ani*) is often discussed. It may, therefore, be of advantage to give in The Practitioner, perhaps the most widely-read medical journal, a brief general account of the condition, incorporating into it the results of my further researches on the subject.

Definition.—Mycotic (phycotic) pruritus ani is a form of pruritus ani caused by fungi higher than bacteria (mycetes, higher fungi), generally fungi of the genus Epidermophyton, the same fungi which cause pruritus interdigitalis pedum (toe phytosis, dermatitis interdigitalis mycotica, mango toe), and also ordinary dhobie itch or tinea cruris. The condition is, in fact,

as a rule, a form of latent epidermophytosis of the ano-perianal region without the usual objective symptoms of an ordinary active epidermophytosis being present.

Synonyms. — Phycotic pruritus ani, mycetic pruritus ani, mycotic pruritus ani, fungal pruritus ani, pruritus ani due to the higher fungi, epidermophyton pruritus ani.

Clinical Symptoms.—The patient complains of very severe pruritus, not, as a rule, continuous, but at intervals. The pruritus is often worse at night, but the attacks of unbearable itching may come on at any time. The inspection of the ano-perianal region in very recent cases may reveal nothing at all except, perhaps, signs of scratching, but in most cases, on careful examination, minute red, slightly raised, infiltrated patches may be seen in the perianal region, occasionally arranged into two curved lines. In a number of old cases signs of dry or moist eczematous dermatitis are present, and streptococcus and other secondary bacterial infections may become engrafted on the mycotic condition. In some old-standing cases the skin is thickened, lichenified, and present the picture of the so-called eczema ani chronicum of old authors. When the secondary bacterial infection becomes very heavy, especially if many coli and proteus bacilli are present, the fungus may disappear completely or become extremely scarce.

Illustrative Cases.

Case 1 (uncomplicated type).—This case has already been published by me in the "Journal of Tropical Medicine." The patient, a Ceylon planter, came to consult me in October, 1924. He had been suffering from anal pruritus for six years, and had tried numerous ointments and lotions without any permanent benefit. He denied ever having had dhobie itch or mango toe (epidermophytosis interdigitalis pedum). The examination of the ano-perianal region did not show anything abnormal, except on close examination a very few minute red patches which did not give the impression of an epidermophytic infection; no lesions of any kind were found in the scroto-inguinal regions. Scrapings were made every other day for two weeks, and were examined microscopically in liquor potassæ; they were always negative except on one occasion, when a few spores and portions of mycelial threads

were seen. After many failures a fungus was grown with all the characteristics of epidermophyton cruris. An ointment containing salicylic acid, eucalyptus oil, mercury salicylate, bismuth subnitræ (Deek's ointment), cured the condition.

Case 2.—Mr. A. G., aged 40, has never been out of Europe. Came to consult me in February, 1925. Six years before began complaining of pruritus ani and, after a sojourn of several months in the South of France, was treated with various ointments without any distinct benefit. At the time he consulted me the skin about the anus was red and somewhat thickened. The inspection of the inguino-crural region showed absence of dhobie itch, and the patient denied ever having had it. On questioning him I elicited the fact that he had been suffering from pruritus interdigitalis pedum for several years; inspection of the toes showed a few cracks and slight peeling. From scrapings of the toes I obtained epidermophyton cruris fairly easily, but scrapings from the ano-perianal region, made and examined daily, remained negative for nineteen days, when a few mycelium segments of a fungus were found. The fungus was grown with very great difficulty owing to the presence of numerous cocci and bacilli, and found to be E. cruris. In this case a sulphur salicylic ointment and a tar ointment answered well.

Case 3.—Mr. N. B., aged 25, has been in the Far East for three years. He consulted me in November, 1924. Had dhobie itch two years previously, which, he says, was cured by a Goa powder ointment. For six months previous to the time I saw him he had severe pruritus ani. Examination of the ano-perianal region showed nothing except signs of scratching. After many attempts E. cruris was grown.

Case 4.—Young woman, English, a planter's wife, while in Ceylon developed severe pruritus ani which did not answer to any therapeutic measure. Came from the Tropics to London at the beginning of November, 1925, and consulted me a few days after her arrival. In the perianal region several minute red patches were present. Scrapings revealed presence of spore-like bodies and a few mycelial segments. The fungus on cultivation was found to be E. rubrum. Deeks's ointment cured the condition.

Case 5.—Mr. F. M., Englishman, 22 years of age, has never resided in tropical countries. In August, 1925, consulted me for typical T. cruris (dhobie itch), localized to the inguino-scrotal region. The ano-perianal region was not affected, and the patient did not complain of pruritus ani, but only of severe pruritus in the inguinal region. Under an appropriate treatment all the symptoms disappeared. He came to consult me again very recently (May, 1926), complaining solely of intense anal pruritus. The skin of the inguinal and scroto-crural region was absolutely normal, and there was no pruritus. The ano-perianal region showed an eczematous dermatitis with redness and slight scaling, but with no festooned appearance of an ordinary case of dhobie itch; in fact, but for the history of previous T. cruris nothing pointed to a mycotic dermatitis. E. rubrum was grown, and all the symptoms disappeared by using

the following ointment: Acid salicy. gr. 30; sulphur pr. gr. 30; vaseline 1 oz.

Ætiology.—The cause of the condition is generally to be found in the presence of the fungi of the genus epidermophyton, the same fungi which produce ordinary tinea cruris (dhobie itch) and pruritus interdigitalis pedum; occasionally fungi of the genus trichophyton may be present. The species of epidermophyton found have been E. cruris and E. rubrum; yeast-like fungi are also often present, but I doubt whether they play an important ætiological rôle. It may, perhaps, be useful to touch briefly upon the botanical characters of epidermophyton fungi, trichophyton fungi, and yeast-like fungi.

Genus Epidermophyton, Lang, 1879, *emendavit Sabouraud,* 1907.

Definition.—Trichophytinæ with mycelial filaments and spores present in the lesions, and with pluri-septate spindles present in the cultures. Do not attack the hair or hair follicles, but grow in the superficial layers of the epidermis.

Type Species.—Epidermophyton cruris Castellani, 1915 (synonyms: E. inguinalis, Sabouraud, 1907; E. castellanii, Brooke, 1908).

Remarks.—The fungi belonging to this genus grow superficially on the skin without invading the hairs and hair follicles; certain authorities, however, state that they may infect lanugo hair; do not produce suppuration. Reproduction takes place principally by pluri-septate spindles or macroconidia, with, on the average, four to six cells. The septa, as noted by Pinoy, may not be complete, and the cavities may communicate. Spiral hyphæ, as found in most species of trichophyton, are absent; pectinate structures, as found in the microsporons, are absent; no spore-bearing hyphæ, with lateral conidia of type Acladium, as noted both in the trichophytons and the microsporons. The cultures undergo rapid degenerative changes, losing their characteristics, and becoming covered with abundant, uniform, long, white duvet (pleormorphism). They are not inoculable into guinea-pigs, except Pinoy's epidermophyton simii. The species so far known have been isolated from human lesions, except the epidermophyton discovered by Pinoy in monkeys.

Table of Epidermophytons.

Genus.	*Species.*
Epidermophyton, Lang, 1879, emendavit Sabouraud, 1907.	E. cruris, Castellani, 1905.
	E. perneti, Castellani, 1907.
	E. rubrum, Castellani, 1907.

These species may be recognized by their growth on Sabouraud's agar:

(*a*) Colour: peculiar yellow - - - cruris
(*b*) Colour: pinkish - - - - - perneti
(*c*) Colour: deep red - - - - - rubrum

For E. simii, Pinoy, 1911, Chalmers and I created the genus Pinoyella.

Epidermophyton Cruris, Castellani, 1905.

Synonyms.—Trichophyton cruris, Castellani, 1905; epidermophyton inguinalis, Sabouraud, 1907; T. castellanii, Brooke, 1908.

Found first in cases of dhobie itch (tinea cruris) in Ceylon by me, and later in France by Sabouraud. The fungus is very abundant in recent cases, extremely scarce in old ones. The mycelial tubes in recent cases are generally straight, have often a double contour, and the segments are somewhat rectangular, their breadth being 3½ to 4½ microns. Branching is not rare. The spores are rather large (4 to 7), roundish, and have generally a double contour; they do not collect in clusters. In chronic cases degeneration forms of the fungus are met with; the mycelium may be banana-shaped, may show several constrictions, or long strings of ovoid elements may be seen. This epidermophyton grows well, but rather slowly, on glucose agar and maltose agar. The growth begins to be visible after four to eight days, the colonies being at first of a peculiar yellow colour, lemon yellowish or orange yellowish, occasionally with a greenish tinge. Later they become white with pulverulent surface, and may be acuminate or crateriform. Pleomorphism, with abundant white duvet, develops quickly. This fungus is the commonest species found in cases of tinea cruris in Europe, India, and Ceylon. It is not inoculable into guinea-pigs. Attempts at reproducing the eruption in man by inoculating pure cultures have generally failed, but De Silva and others have recently succeeded in reproducing the disease.

Epidermophyton Perneti, Castellani, 1907.

This fungus has been described by Pernet in a case of tinea corporis. It differs from E. cruris by growing much more rapidly on Sabouraud's agar, and by the cultures having a delicate pinkish colour, which is generally lost in subcultures. It is a very rare fungus.

Epidermophyton Rubrum, Castellani, 1909.

Synonym, Trichophyton purpureum, Bang, 1910.—This fungus was described by me in Ceylon in 1909, and by Bang in France in 1910. On maltose agar the growth begins to appear four or six days after inoculation as a raised red spot which gradually enlarges. At complete development the growth is of a deep red colour, either with a central knob or crateriform, and is partly covered with a white, delicate duvet. In old cultures the white duvet is much more abundant and thicker, and may hide the red pigmentation almost completely. On glucose agar (4 per cent.), which is the best medium for this fungus, the growth is of a very deep blood-red colour, and the red pigmentation may spread to portions of the medium itself. In old

cultures abundant white, occasionally white-greenish duvet is present. This may hide the pigmentations, but on scraping out the duvet the red pigmentation will be found to be still well marked in most cases. On ordinary agar and glycerine agar the fungus grows fairly well, but there is no red pigmentation.

Trichophyton.

Very occasionally fungi of the genus Trichophyton Malmsten, 1845, may be found. A few botanical remarks may not be out of place. I follow the classification introduced by Chalmers and myself (see "Manual of Tropical Medicine," 3rd edition, p. 986).

Genus Trichophyton Malmsten, 1845 (*sensu stricto*).

Definition.—Trichophytoneæ with mycelial filaments and spores present in the lesions and conidial-bearing hyphæ in cultures, only attacking hairs and entirely of human origin. Hardly ever pyogenic.

Type Species.—Trichophyton Tonsurans Malmsten.

General Considerations.—During their parasitic life the species of the genus trichophyton vegetate according to two types : (1) mycelial filaments; (2) mycelial spores. The mycelial filaments consist of long cylindrical cells, separated by septa. The so-called mycelial spores are simply a modification of the mycelial filaments, due to the septa being much closer, so that the cells limited by them are almost as broad as they are long. The term "mycelial spores" is incorrect, as they are not organs of reproduction, but only vegetative organs. When the shape of these mycelial spores or sporulating mycelia is roundish or oval, the filament takes a moniliform appearance. Moreover, these cells are easily dissociated. Such a type is called "fragile mycelium." To this type belongs, for instance, *Trichophyton sabouraudi*, R. Blanchard. When the mycelial spores are square, the filaments straight, and its articles long, the mycelium is called "resistant." This type is observed, for example, in *Trichophyton tonsurans*, Malmsten.

Pleomorphism.—Cultures on maltose and other sugar agars of all trichophytons, with the single exception of T. sabouraudi, becoming old, lose their characteristics and become covered with abundant white duvet. In these cultures, which can be considered degenerate, and are generally called "pleormorphic," organs of fructification are usually absent. By transplanting these cultures the same pleomorphic, downy type of growth will be obtained; never again will the growth show the characteristics of the original young cultures directly obtained from the lesions. It is impossible to return to the original type, even by animal inoculation. To prevent pleomorphism, Sabouraud advises the following medium:

Agar - - - - - - -	1·8 grammes
Peptone Chassaing - - -	3 to 5 grammes
Water - - - - - - -	100 c.cm.

On this medium the growth of the various trichophyton is much less abundant than on sugar media, but the cultures are fairly characteristic, and do not become pleomorphic.

Experimental Inoculations.—Certain trichophytons can easily be inoculated experimentally into man, and into many of the laboratory animals—guinea-pigs, rabbits, etc. Sabouraud advises the inoculation of portions of the cultures to be made into a small fictena, artificially induced by burning, such as by applying to the skin a lighted match. The intravenous injection may induce generalized lesions of the internal organs. The intraperitoneal injection as done by Citron may induce a type of peritoneal pseudo-tuberculosis.

Mode of Infection.—With regard to fungi of the genus *Trichophyton, sensu stricto,* infection takes place from man to man. According to many authorities, there is little doubt that trichophytons may live saprophytically in nature; this explains sporadic cases of trichophytosis in man.

Reproduction.—This takes place by :

1. Lateral and terminal conidia, supported by short sterigmata.
2. Chlamydospores; these are rare.
3. Large terminal septate and unseptate spindles or macroconidia.

Classification.—The principal species of the genus *Trichophyton sensu stricto* arranged chronologically are :

1. *T. tonsurans,* Malmsten, 1845.
2. *T. sabouraudi,* R. Blanchard, 1895.
3. *T. violaceum,* Bodin, 1902.
4. *T. sulphureum,* C. Fox, 1908.
5. *T. glabrum,* Sabouraud, 1909.
6. *T. fumatum,* Sabouraud, 1909.
7. *T. effractum,* Sabouraud, 1909.
8. *T. circonvolutum,* Sabouraud, 1909.
9. *T. regulare,* Sabouraud, 1909.
10. *T. umbilicatum,* Sabouraud, 1909.
11. *T. exsiccatum,* Uriburu, 1909.
12. *T. polygonum,* Uriburu, 1909.
13. *T. soudanense,* Joyeux, 1912.
14. *T. decalvans,* Castellani, 1913.
15. *T. currii,* Chalmers and Marshall, 1914.

These may be recognized as follows :

A. Condition of mycelium in hair not definitely stated, but probably that of the crateriform subdivision.

1. In cultures very convoluted—*Circonvolutum.*

B. Condition of mycelium in hair definitely stated.

I. Mycelium in hair resistant to caustic potash, segments characteristically quadrangular in shape, with double contour, 4 to 6 microns in breadth, arranged in fairly straight ladder-like rows—*Crateriform subdivision.*

(*a*) *Cultures coloured and with craters—Tonsurans group.*

2. Yellow in centre, white at periphery—*Tonsurans.*
3. As "Tonsurans," but when old, cracked, and dry—

Effractum.

4. Orange-red centre, remainder sulphur coloured—*Sulphureum.*
5. Golden-yellow convoluted centre, becoming crateriform later—*Soudanese.*
6. When old of a yellowish-brown colour—*Fumatum.*

(*b*) *Cultures white with craters—Umbilicatum group.*

7. Deeply umbilicated with aureola—*Umbilicatum.*
8. Slow growth, surface cracked, with dry appearance—*Exsiccatum.*
9. Growth at first roundish and then polygonal—*Polygonum.*

(*c*) *Cultures white with knob-like centre—Currii group.*

10. Does not form duvet—*Currii.*

II. Mycelium in hair not resistant to caustic potash; segments rounded, 4·7 microns in diameter, not arranged as a rule in rows, but if a row is visible it resembles a string of beads and not a ladder—*Acuminate subdivision.*

(*a*) *Without acuminate centre—Violaceum group.*

11. Primary growth violet:
    (i) Ordinary amount of scaling on the head—*Violaceum.*
    (ii) Enormous numbers of scales, followed usually by permanent baldness—*Decalvans.*
12. Primary growth white—*Glabrum.*

(*b*) *With acuminate centre—Sabouraudi group.*

13. Without duvet when old—*Sabouraudi.*
14. With duvet when old—*Pilosum.*

Genus Neotrichophyton, Castellani and Chalmers, 1918.

Definition.—Trichophytoneæ with mycelium and spores present in the lesions and conidial-bearing hyphæ in cultures; attack hairs, but with mycelial spores and filaments outside the hair shaft.

Type Species.—Neotrichophyton flavum, Bodin, 1902.

Classification.—There are only two species, which may be distinguished as follows:

1. Cultures cerebriform—*Flavum.*
2. Cultures crateriform and creased—*Plicatile.*

Genus Ectotrichophyton, Castellani and Chalmers, 1918.

Definition.—Trichophytoneæ with mycelium and spores present in the lesions, and conidial-bearing hyphæ in cultures; attack hairs and hair follicles, growing in and on the surface of the hairs; often pyogenic and of animal origin.

Type Species.—Ectotrichophyton mentagrophytes, Robin, 1853.

Classification.—The genus is capable of division into three subgenera by the following characters:

1. *Ectotrichophyton.*—With small spores about 3 to 4 microns in diameter, forming a sheath outside the hair shaft, on dissociation of which they are seen to form chains; with sinuous and quadrangular hyphal segments, together with spores of varying diameter

and air bubbles, inside the hair shaft; with cultures easily obtainable, of rapid growth, and of considerable vitality, characterized by plaster-like or floury centres surrounded by a fringe, when grown on Sabouraud's proof media and by successful inoculations into animals—Subgenus *Microtrichophyton*.

2. *Ectotrichophyton*.—With large spores about 5 to 7 microns in diameter, forming a sheath outside the hair shaft, on dissociation of which they are seen to form chains, and with sinuous hyphal segments, together with large-sized spores and air-bubbles, inside the hair shaft; with cultures easily obtainable, of slow growth in temperate climates, though much more rapid in tropical climates, characterized by their tendency to resemble (at all events when old) those of the achorions, and capable of being inoculated into animals:

(*a*) With early formation of duvet—Subgenus *Ectotrichophyton*.
(*b*) Culture sooner or later resembles that of *Achorion schœnleini*—Subgenus *Favotrichophyton*.

Ectotrichophyton (*Favotrichophyton*), *Castellani and Chalmers*, 1918.

Definition.—Ectotrichophyton with the characters given above for favotrichophyton.

Type Species—*Ectotrichophyton discoides*, Sabouraud, 1909.

Classification.—The Favotrichophyton species which are known are:

E. verrucosum, Bodin, 1902.
E. ochraceum, Sabouraud, 1909.
E. album, Sabouraud, 1909.
E. discoides, Sabouraud, 1909.
E. luxurians, Brault and Viguier, 1914.

These may be differentiated as follows:

A. Condition of mycelium in hair not definitely stated:

I. Young cultures white in colour, and soon resembling those of *Achorion schœnleini*, but sunk into the medium—*Album*.

B. Condition of mycelium in hair that of an ecto-endothrix:

II. Cultures grey in colour, humid, with verrucose surface—*Verrucosum*.
III. Young cultures of a yellow-ochre colour—*Ochraceum*.
IV. Cultures yellowish-brown or greyish-yellow, cupola-shaped, humid, with usually smooth surfaces, and not resembling the achorion cultures until old—*Discoides*.
V. Very rapid development—*Luxurians*.

Ectotrichophyton (*Microtrichophyton*), *Castellani and Chalmers*, 1918.

Definition.—Ectotrichophyton with small spores 3 to 4 microns in diameter.

Type Species.—*Ectotrichophyton* (*Microtrichophyton*) *mentagro-*

phytes, Robin, 1853.

Classification.—The following species are known :

E. mentagrophytes, Ch. Robin, 1853.
E. felineum, R. Blanchard, 1895.
E. granulosum, Sabouraud, 1908.
E. farinulentum, Sabouraud, 1910.
E. persicolor, Sabouraud, 1910.
E. lacticolor, Sabouraud, 1910.
E. radiolatum, Sabouraud, 1910.
E. denticulatum, Sabouraud, 1910.

These may be differentiated as follows :

A. Grows best on agar without sugars—*Persicolor.*
B. Grows best on agar with sugars :

I. Growth white, elevated centre, powdery surface, radiating furrows.

(*a*) Furrows well marked. Pure white—*Mentagrophytes.*
(*b*) Furrows poorly marked. Not so white—*Radiolatum.*

II. Growth white, discoid, umbilicated, but later knob in centre; white, powdery surface, radiating furrows—*Farinulentum.*
III. Growth white, yellowish, dotted with granular projections—*Granulosum.*
IV. Growth cream white to yellowish, not granular—*Lacticolor.*
V. Growth white, with umbilicated centre, with numerous radiating projections at periphery.

(*a*) Projections well marked—*Felineum.*
(*b*) Projections poorly marked—*Denticulatum.*

Genus Atrichophyton, Castellani and Chalmers, 1918.

Definition.—Trichophytoneæ with mycelium and spores present in the lesions and conidia on short stalks, but they do not attack hairs.

Type Species.—*Atrichophyton albiscicans*, Nieuwenhuis, 1907.

Classification.—The following will indicate the characters of the species :

A. *Has been cultivated :*

I. Culture with powdery surface—*Albiscicans.*
II. Culture brownish mass with deep furrows—*Macfadyeni.*
III. Cultures pinkish with violet tinge—*Viannai.*

B. *Has not been cultivated :*

I. Spores are numerous and of various sizes—*Blanchardi.*
II. Spores are few and about 4 microns in diameter—*Ceylonense.*

Yeast-like Fungi.

In some cases of pruritus ani I have found fungi of the genus monilia persoon and other yeast-like organisms (saccharomyces, cryptococcus, etc.), either

alone or together with epidermophyton, but I doubt whether they play an important part in the causation of the pruritus; they probably play the rôle of secondary invaders, similar to the rôle played by certain bacteria, such as streptococcus.

In other publications I have given a botanical classification of yeast-like fungi (see also "Manual of Tropical Medicine," by Castellani and Chalmers, third edition, chapters on fungi), but I will limit myself here to mention a very simple scheme of classification which may be used by clinicians for practical purposes. In this scheme the two principal features to which importance is given are:

1. Presence or absence of mycelium.
2. Presence or absence of ascospores.

Yeast-like Fungi	Mycelium absent	Ascospores absent	*Cryptococcus sensu lato*
		Ascospores present	*Saccharomyces sensu lato*
	Mycelium present (at times in a very small amount)	Ascospores absent	*Monilia sensu lato*
		Ascospores present	*Endomyces sensu lato*

Bacteria.

Bacteria are usually present, and coli-like organisms, proteus, various cocci, including several kinds of streptococci have been found. They may, and probably do, play a part in the causation of the secondary eczematous dermatitis, but I doubt whether they alone can produce severe pruritus. A case of so-called streptococcus pruritus recently sent to me turned out to be a case of epidermophyton infection, due to epidermophyton cruris. The streptococcus was abundantly present, but was not the actual cause of the pruritus, as streptococcus vaccine caused no improvement whatever in the local condition, while an antimycotic treatment with sulphur and salicylic acid cured it.

Diagnosis.—A definite diagnosis of mycotic pruritus

ani cannot be made without epidermophyton or trichophyton fungi being found microscopically or by mycological cultural methods; a diagnosis of probability can often be made, however, on clinical grounds, the minute, red, infiltrated patches, fairly often seen on careful examination in the ano-perianal region, being suggestive, especially if the patient is suffering from mycotic dermatitis of the toes, or gives a history of having suffered from dhobie itch or tinea cruris in the past. When the bacterial flora is very abundant it may be extremely difficult or impossible to isolate the fungi.

Course and Prognosis.—The course of the condition is chronic, but periods of great improvement and apparent cure may alternate with periods of severe recrudescence. Attention should be called to certain cases, fortunately rare, in which although the fungus under appropriate treatment has completely disappeared, the pruritus still continues. This is observed in highly strung, very nervous individuals. Very difficult cases are also patients suffering from, or having a tendency to, true eczema; when they become infected with epidermophyton fungi—either the irritation caused by the fungi themselves or set up by the treatment to eradicate the condition—they may develop an attack of eczema not only in the ano-perianal region but in many other regions of the body.

Treatment.—In uncomplicated cases an ointment I have found very efficacious is the following: sulphur præc. gr. 30, acid salicyl. gr. 30, vaseline ʒj—the ointment I introduced some years ago for the treatment of ordinary tinea cruris. A preparation which frequently answers remarkably well is Deeks's ointment, which consists of salicylic acid 4 parts, bismuth subnitrate 10 parts, mercury salicylate 4 parts, oil of eucalyptus 4 parts, vaseline and lanoline sufficient to make up to 100 parts. It is interesting to note that long ago Deeks found that this antimycotic ointment had a very beneficial action in

many cases of pruritus ani, although the existence of a mycotic type of the condition was not known at the time. A slightly modified Whitfield's ointment is also useful: carbolic acid 5 gr., salicylic acid 15 to 30 gr., acid benz. 15 to 30 gr., vaseline 1 oz. In several cases I have found the following ointment most useful: Ung. picis ʒj, zinc oxide 40 gr., ung. ac. salicylic 4 drachms, lanolin ad 1 oz.

In certain cases an ointment containing 2 gr. of chrysarobin to the ounce of vaseline is efficacious, but it may occasionally induce a severe reaction, and it stains, of course, the underclothing. It should not be used when there is any affection of the kidneys, and the patient should be told never to touch his face or eyes after applying the ointment.

Diluted tincture of iodine is at times useful, as well as collosol iodine oil. A strong lotion of potassium permanganate (15 gr. to 1 dr. to distilled water 1 ounce) is occasionally useful, also the frequent swabbing of the ano-perianal region with a perchloride of mercury lotion (1 in 1,000) or resorcin lotion (1 to 5 per cent.).

When the pruritus is unbearable, painting the parts with a lotion consisting of arg. nitr. 15 gr., spir. æther nitr. 1 oz., at times stops the itching, either immediately or after a short period of time, during which the pruritus may become intensified; this paint should be used with care. In very chronic cases X-ray treatment is to be recommended; it is often successful, though, unfortunately, not always.

MYCOTIC PRURITUS VULVÆ.

This condition is very similar to pruritus ani of mycotic origin, and it is not rare to observe female patients suffering from both conditions.

Ætiology.—Mycotic pruritus vulvæ is caused by the presence of fungi of the genus epidermophyton, occasionally of the genus trichophyton, which remain

dormant in the external region of the labia majora without giving rise to the ordinary signs of active tinea cruris or dhobie itch. Not rarely yeast-like fungi, usually of the genus monilia, but occasionally belonging to the genera cryptococcus, saccharomyces, endomyces, may also be found—the fungi of the vaginal as well as oral thrush—but in my experience it is rather doubtful whether they can alone give rise to severe pruritus, as under an appropriate treatment monilias may be made to disappear, but the pruritus usually persists. Monilias probably play the rôle of secondary invaders similarly to the many bacteria so often found in the condition, among which are various cocci and coli organisms.

Clinical Symptoms.—The patient complains of very severe pruritus, in most cases at intervals. The examination of the genital parts may reveal nothing at all, but at times a few minute, red, hardly raised infiltrated patches may be seen. In long-standing cases an eczematous moist or dry dermatitis often develops, due to secondary bacterial invasion. In chronic cases there is often a large amount of vaginal discharge, in which various bacteria are found and fairly frequently monilia fungi.

Illustrative Case.

An elderly spinster consulted me some time ago for vaginal pruritus of some years' duration, which had been treated by different medical men in various ways without any distinct amelioration resulting. In the perianal region, on the perineum and on the labia majora, a very few small reddish patches were seen, which it was thought, might be due to scratching. There was an abundant purulent vaginal discharge, and also purulent discharge from the anus, with symptoms of proctitis. A complete mycological and bacterial investigation was carried out. From the scrapings of the perianal region and the labia majora a fungus was grown with the characters of *Epidermophyton cruris*, Castellani, 1905, the fungus which is the commonest cause of dhobie itch and pruritus interdigitalis pedum. In the vaginal and in the rectal discharge enormous numbers of monilias were present, with very few bacilli; cultivation showed the fungus to be a strain of *Monilia pinoyi*, Castellani.

The following treatment was given: Creosote was administered by the mouth; tinc. iod., which in this case did not give rise to any

local pain or irritation, was freely applied once a day to the ano-perianal region, the perineum and the external surface of the labia majora. For the first three days hot alkaline irrigations (1 dr. of bicarbonate of soda to a pint of water) were given; afterwards, twice a day, an iodine irrigation (tinct. iodi. 1 dr., aq. ad Oij). Within two weeks the lady was completely free from the anal and vaginal pruritus; the purulent rectal discharge decreased, but did not quite disappear. The monilias present diminished enormously in number, but did not disappear completely.

Prognosis.—The condition has no tendency to spontaneous cure, but periods of great improvement and even complete cessation of the pruritus may be noted.

Treatment.—This is on the same lines as for mycotic pruritus ani. In uncomplicated cases my salicylic sulphur ointment (acid salicyl. 30 gr., sulphur gr. 30, vaseline ʒj) or Deeks's ointment half strength, or a modified Whitfield ointment answers well, or painting with diluted tinct. iodine. When an acute eczematous dermatitis, generally due to vaginal discharge, is present, local applications with lotio plumbi (liquor plumbi sub. 1 dr. to the pint), liquor carbonis detergens (2 dr. to the pint), are useful, and vaginal douching with iodine (tr. iodine 1 dr. to two pints), or potassium permanganate (1 in 5,000) should be carried out. Later tar ointments or pastes, such as liq. picis min. 10–20, zinci ox. 2 dr., vasl. ad. 1 oz., are useful. X-ray treatment is at times very useful.

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